Chemistry Class - 11: Chapter – 9. Hydrogen Part – 1

I. Multiple Choice Questions (Type-I)

Question: 1

Hydrogen resembles halogens in many respects for which several factors are responsible. Of the following factors which one is most important in this respect?

(i) Its tendency to lose an electron to form a cation.

(ii) Its tendency to gain a single electron in its valence shell to attain stable electronic configuration.

(iii) Its low negative electron gain enthalpy value.

(iv) Its small size.

Answer: (ii)

Question: 2

Why does H^+ ion always get associated with other atoms or molecules?

(i) Ionisation enthalpy of hydrogen resembles that of alkali metals.

(ii) Its reactivity is similar to halogens.

(iii) It resembles both alkali metals and halogens.

(iv) Loss of an electron from hydrogen atom results in a nucleus of very small size as compared to other atoms or ions. Due to small size it cannot exist free.

Answer: (iv)

Question: 3.

Metal hydrides are ionic, covalent or molecular in nature. Among $LiH, NaH,$

$KH, RbH, CsH,$ the correct order of increasing ionic character is

(i) $LiH > NaH > CsH > KH > RbH$

(ii) $LiH < NaH < KH < RbH < CsH$

(iii) $RbH > CsH > NaH > KH > LiH$

(iv) $NaH > CsH > RbH > LiH > KH$

Answer: (ii)

Question: 4.

Which of the following hydrides is electron-precise hydride?

(i) B_2H_6

(ii) NH_3

(iii) H_2O

(iv) CH_4

Answer: (iv)

Question: 5

Radioactive elements emit $\alpha, \beta \text{and} \gamma$ rays and are characterised by their half lives. The radioactive isotope of hydrogen is

(i) Protium

(ii) Deuterium

(iii) Tritium

(iv) Hydronium

Answer: (iii)

Question: 6

Consider the reactions

(A) $H_2O_2 + 2HI \rightarrow I_2 + 2H_2O$

(B) $HOCl + H_2O_2 \rightarrow H_3O^+ + Cl^- + O_2$

Which of the following statements is correct about H_2O_2 with reference to these reactions? Hydrogen perioxide is _____.

(i) an oxidising agent in both (A) and (B)

(ii) an oxidising agent in (A) and reducing agent in (B)

(iii) a reducing agent in (A) and oxidising agent in (B)

(iv) a reducing agent in both (A) and (B)

Answer: (ii)

Question: 7

The oxide that gives H_2O_2 on treatment with dilute H_2SO_4 is —

(i) PbO_2

(ii) $BaO_2.8H_2O + O_2$

(iii) MnO_2

(iv) TiO_2

Answer: (ii)

Question: 8

Which of the following equations depict the oxidising nature of H_2O_2 ?

(i) $2MnO_4^- + 6H^+ + 5H_2O_2 \rightarrow 2Mn^{2+} + 8H_2O + 5O_2$

(ii) $2Fe^{3+} + 2H^+ + H_2O_2 \rightarrow 2Fe^{2+} + 2H_2O + O_2$

(iii) $2I^- + 2H^+ + H_2O_2 \rightarrow I_2 + 2H_2O$

(iv) $KIO_4 + H_2O_2 \rightarrow KIO_3 + H_2O + O_2$

Answer: (iii)

Question: 64

Match Column I with Column II for the given properties/applications mentioned therein.

Column I		Column II	
(i)	H	(a)	Used in the name of perhydrol
(ii)	H_2	(b)	Can be reduced to dihydrogen by NaH
(iii)	H_2O	(c)	Can be used in hydroformylation of olefin.
(iv)	H_2O_2	(d)	Can be used in cutting and welding

Match Column I with Column II for the Given Properties/Applications Mentioned Therein

Answer:

$(i) \rightarrow (d)\,(ii) \rightarrow (c)\,(iii) \rightarrow (b)\,(iv) \rightarrow (a)$